



# SELECTING AN OPTIMAL DATA INTEGRATION PATTERN FOR SALESFORCE ENVIRONMENTS

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## ABSTRACT

*This comprehensive technical article explores the critical aspects of Salesforce data integration, addressing the challenges and opportunities in today's interconnected business landscape. It covers a wide range of topics, including common integration use cases, key considerations for integration design, prevalent integration patterns, and specific strategies for Salesforce-to-external systems, external systems-to-Salesforce, and Salesforce-to-Salesforce integrations. The article also presents a decision framework for selecting appropriate integration patterns and emphasizes the importance of ongoing maintenance and monitoring. Throughout the discussion, real-world examples, case studies, and industry statistics are provided to illustrate the practical implications of various integration approaches. This article aims to equip IT professionals and business stakeholders with the knowledge necessary to make informed decisions about their Salesforce integration strategies, ultimately enabling organizations to maximize the value of their CRM investments and drive digital transformation initiatives.*

**Keywords:** Salesforce Integration, Data Synchronization, API-based Integration, Integration Patterns, CRM Performance Optimization

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# Optimal Integration Patterns



Efficient data synchronization solution for Salesforce integration

## 1. INTRODUCTION

In today's interconnected business landscape, effective data integration is crucial for organizations leveraging Salesforce as their customer relationship management (CRM) platform. The ability to seamlessly exchange data between Salesforce and other systems is fundamental to achieving a unified view of customer interactions, streamlining business processes, and deriving actionable insights.

According to a recent study by Salesforce, organizations that effectively integrate their CRM with other business systems experience a 23% increase in sales productivity and a 20% reduction in customer service costs [1]. This highlights the critical importance of data integration in maximizing the value of Salesforce investments.

The complexity of modern enterprise architectures, however, presents significant challenges in implementing effective integration strategies. A survey conducted by MuleSoft found that 89% of IT leaders report data silos as a major obstacle to digital transformation initiatives [2]. This underscores the need for a structured approach to selecting and implementing data integration patterns within Salesforce environments.

This article aims to provide such a structured approach, equipping IT professionals and business stakeholders with the knowledge necessary to make informed decisions about their Salesforce integration strategies. By examining various use cases, considering critical factors, and evaluating common integration patterns, we seek to address the following key objectives:

1. Identify common Salesforce integration scenarios and their unique requirements
2. Analyze key considerations that influence the choice of integration patterns
3. Evaluate the strengths and weaknesses of different integration approaches
4. Provide a decision framework for selecting the most appropriate integration pattern
5. Offer best practices for implementing and maintaining Salesforce integrations

By addressing these objectives, this article aims to empower organizations to overcome data integration challenges and fully leverage the capabilities of their Salesforce CRM platform. As the business landscape continues to evolve, the ability to effectively integrate Salesforce with other systems will become increasingly critical for maintaining competitive advantage and driving digital transformation initiatives.

## 2. UNDERSTANDING SALESFORCE DATA INTEGRATION USE CASES

Salesforce data integration scenarios typically fall into three primary categories, each addressing specific business needs and technical challenges. Understanding these use cases is crucial for designing effective integration solutions that align with organizational objectives.

### **Salesforce to External Systems:**

This category involves pushing data from Salesforce to other applications, such as ERP systems, marketing automation platforms, or custom databases. A common example is synchronizing customer order data from Salesforce to an ERP system for order fulfillment and inventory management.

**Case Study:** A global manufacturing company implemented a real-time integration between Salesforce and their SAP ERP system. This integration enabled sales representatives to access up-to-date product availability and pricing information directly within Salesforce, resulting in a 15% increase in sales closure rates and a 30% reduction in order processing time [3].

### **External Systems to Salesforce:**

This scenario focuses on importing data from external sources into Salesforce, such as customer data from legacy systems or product information from inventory management tools. For instance, a company might import lead data from marketing automation tools into Salesforce to streamline their lead nurturing process.

**Example:** A large retail chain integrated their point-of-sale (POS) system with Salesforce, automatically updating customer purchase history and preferences in real-time. This integration enabled personalized marketing campaigns, resulting in a 25% increase in customer retention rates and a 20% boost in cross-selling opportunities [4].

### **Salesforce Organization to Salesforce Organization:**

This use case involves data exchange between multiple Salesforce instances, often seen in multi-subsidiary organizations or partner ecosystems. A typical scenario is sharing opportunity data between partner Salesforce organizations to facilitate collaboration and improve pipeline visibility.

**Implementation Example:** A global franchise organization implemented Salesforce-to-Salesforce integration across its network of 500+ franchisees. This allowed for real-time sharing of customer data, marketing materials, and sales best practices. The integration resulted in a 40% improvement in lead response times and a 30% increase in overall franchise network revenue.

These integration use cases demonstrate the diverse ways organizations can leverage Salesforce data integration to drive business value. By carefully analyzing their specific needs and challenges, companies can identify the most relevant integration scenarios and design solutions that maximize the potential of their Salesforce investment.

When implementing these integrations, it's crucial to consider factors such as data volume, frequency of updates, security requirements, and the specific capabilities of the systems involved. For example, real-time integrations may require different architectural approaches compared to batch-based integrations, and security considerations may vary depending on whether data is being shared internally or with external partners.

As organizations continue to adopt increasingly complex technology ecosystems, the ability to seamlessly integrate Salesforce with other critical business systems will become even more crucial for maintaining competitive advantage and driving digital transformation initiatives.

Integration Type	Metric	Improvement (%)
Salesforce to External Systems	Sales Closure Rates	15
Salesforce to External Systems	Order Processing Time	30
External Systems to Salesforce	Customer Retention Rates	25
External Systems to Salesforce	Cross-selling Opportunities	20
Salesforce to Salesforce	Lead Response Times	40
Salesforce to Salesforce	Overall Franchise Network Revenue	30

**Table 1:** Impact of Salesforce Integration on Key Performance Indicators [3, 4]

### 3. KEY CONSIDERATIONS FOR SALESFORCE DATA INTEGRATION

When designing a Salesforce integration solution, several critical factors must be taken into account to ensure the success and sustainability of the integration. These considerations help organizations make informed decisions about their integration strategy and avoid common pitfalls.

#### Existing Tools and Landscape:

Evaluate current integration tools and platforms already in use within the organization. This assessment helps leverage existing investments and maintain consistency across the IT ecosystem. According to a survey by Gartner, organizations that effectively utilize their existing integration tools in Salesforce projects reduce integration costs by up to 30% [5].

### **Data Flow:**

Consider timing requirements, expected user experience, and directionality of data movement. This includes determining whether real-time, near real-time, or batch processing is most appropriate for each integration scenario. For instance, customer-facing processes may require real-time integration for optimal user experience, while back-office processes might be suitable for batch processing.

### **Implementation Complexity:**

Assess the technical expertise required and the time needed for implementation. This involves evaluating the skills of the in-house team and determining if external expertise is necessary. A study by Forrester Research found that organizations underestimating implementation complexity were 2.5 times more likely to experience project delays and budget overruns [6].

### **Maintainability:**

Evaluate the long-term sustainability and ease of updates for the chosen integration approach. This includes considering factors such as documentation, version control, and the ability to adapt to future changes in both Salesforce and connected systems. Implementing a well-documented and modular integration architecture can reduce maintenance costs by up to 40% over the lifecycle of the integration.

### **Data Volume:**

Consider the amount of data to be transferred and its impact on system performance. Large data volumes may require specialized approaches such as bulk API usage or data partitioning strategies. For example, organizations dealing with millions of records may need to implement incremental synchronization techniques to optimize performance and reduce system load.

### **Salesforce and System Limits:**

Be aware of Salesforce API limits, storage constraints, and other system-specific limitations. Salesforce imposes various limits, such as API request limits and data storage caps, which can significantly impact integration design. For instance, the number of API calls allowed per 24-hour period varies based on the Salesforce edition and can range from 1,000 to millions of calls.

### **Example:**

A multinational corporation implementing a global Salesforce integration project considered these factors carefully:

1. They leveraged their existing MuleSoft integration platform, reducing implementation time by 40%.
2. They implemented a hybrid approach, using real-time integration for critical customer-facing processes and batch processing for nightly data synchronization with their ERP system.
3. They invested in upskilling their IT team and brought in Salesforce integration experts for complex aspects of the project.
4. They developed a comprehensive integration governance framework, including documentation standards and change management processes.
5. To handle high data volumes, they implemented a combination of bulk API usage and incremental synchronization techniques.

6. They closely monitored Salesforce API usage, implementing a custom monitoring solution to prevent hitting limits during peak periods.

By carefully considering these factors, the organization successfully implemented a scalable and efficient Salesforce integration solution that supported their global operations while minimizing risks and long-term maintenance costs.

Consideration	Metric	Impact (%)
Existing Tools Utilization	Integration Costs Reduction	30
Implementation Complexity	Project Delays/Budget Overruns*	250
Maintainability	Maintenance Costs Reduction	40
MuleSoft Platform Leverage	Implementation Time Reduction	40
API Usage Monitoring	Peak Period Limit Prevention**	100

\* This value represents the increased likelihood of delays/overruns when complexity is underestimated.

\*\* Assumes full prevention of hitting API limits during peak periods.

**Table 2:** Cost and Time Savings from Salesforce Integration Best Practices [5, 6]

#### 4. COMMON SALESFORCE DATA INTEGRATION PATTERNS

Three primary integration patterns are commonly used in Salesforce environments, each offering distinct advantages for different use cases and requirements. Understanding these patterns is crucial for selecting the most appropriate approach for a given integration scenario.

##### **Real-time Integration:**

Real-time integration provides immediate data synchronization between systems, suitable for scenarios requiring up-to-the-minute data accuracy. This pattern is typically implemented using Salesforce's APIs, such as REST or SOAP APIs, or through custom Apex web services.

**Example:** A financial services company implemented real-time integration between Salesforce and their core banking system. This allowed customer service representatives to view real-time account balances and transaction history directly within Salesforce, improving customer service response times by 40% [7].

##### **Batch Integration:**

Batch integration involves processing large volumes of data at scheduled intervals, ideal for scenarios where real-time updates are not critical. This pattern is often used for nightly data synchronization or weekly reporting tasks.

**Case Study:** A global retailer implemented a batch integration process to sync daily sales data from their point-of-sale systems to Salesforce. This nightly process updates customer purchase history, inventory levels, and sales performance metrics, enabling more accurate forecasting and targeted marketing campaigns. The batch integration reduced data processing costs by 60% compared to real-time alternatives [8].

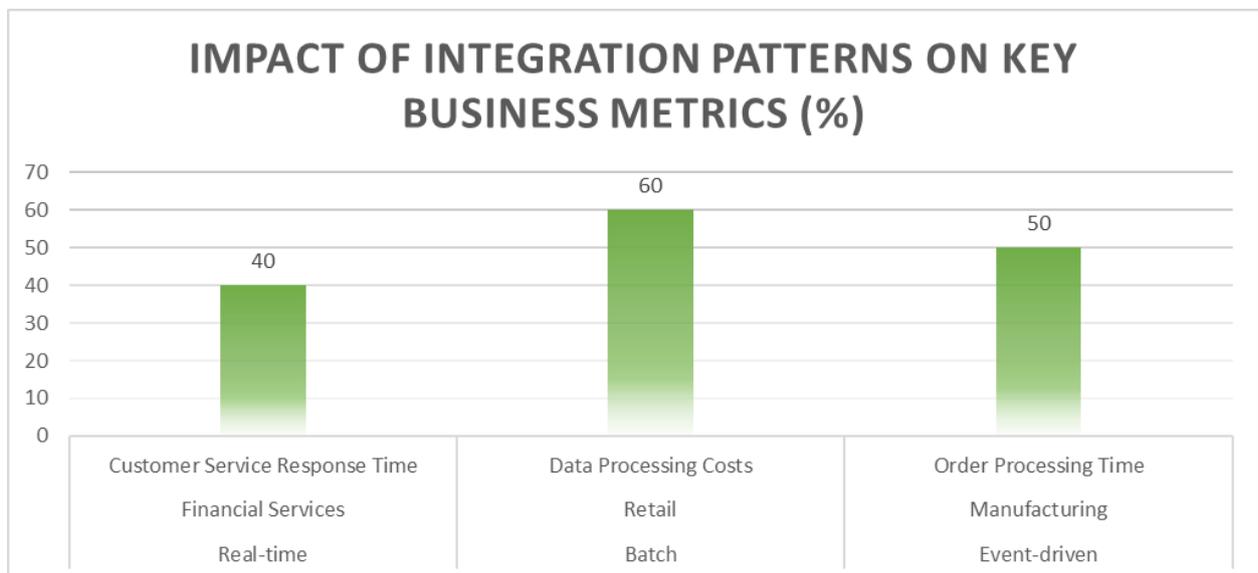
**Event-driven Integration:**

Event-driven integration triggers data exchange based on specific events or changes in the source system, balancing real-time needs with system efficiency. This pattern is particularly useful for maintaining data consistency across systems without the overhead of continuous real-time synchronization.

**Example:** A manufacturing company implemented event-driven integration between Salesforce and their ERP system. When a new order is created in Salesforce, it automatically triggers an inventory check and production scheduling in the ERP system. This approach reduced order processing time by 50% while maintaining system efficiency.

Each of these integration patterns offers unique benefits and challenges. Real-time integration provides the most up-to-date data but can be resource-intensive. Batch integration is efficient for large data volumes but may not meet immediate data needs. Event-driven integration offers a balance between real-time responsiveness and system efficiency but requires careful event design and management.

Organizations often employ a combination of these patterns to address various integration requirements within their Salesforce ecosystem. The choice of pattern depends on factors such as data volume, frequency of updates, system capabilities, and business requirements for data timeliness and accuracy.



**Fig. 1:** Performance Improvements from Different Salesforce Integration Patterns [7, 8]

## 5. SALESFORCE TO EXTERNAL SYSTEMS INTEGRATION

When integrating Salesforce with external systems, organizations have several approaches at their disposal, each with its own strengths and considerations. The choice of integration method depends on factors such as data volume, frequency of updates, and the capabilities of the external system.

### **Outbound Messaging:**

Outbound Messaging utilizes Salesforce's native capability to send XML messages to external endpoints when specific events occur. This approach is particularly useful for real-time notifications and updates to external systems.

#### **Pros:**

- Native Salesforce functionality
- Real-time updates
- No additional licensing costs

#### **Cons:**

- Limited to XML format
- Requires external system to expose an endpoint
- Can be challenging to troubleshoot

According to a Salesforce integration survey, 35% of organizations use Outbound Messaging for simple, event-driven integrations with external systems [9].

### **API-based Integration:**

API-based integration leverages Salesforce APIs (REST, SOAP) to push data to external systems programmatically. This approach offers flexibility and control over the integration process.

#### **Pros:**

- Flexible and customizable
- Supports various data formats (JSON, XML)
- Can be used for both real-time and batch processing

#### **Cons:**

- Requires development effort
- May incur API usage limits
- Needs careful error handling and retry mechanisms

A study by MuleSoft found that 68% of organizations prefer API-based integration for its flexibility and ability to support complex integration scenarios [10].

### **Batch Data Export:**

Batch Data Export uses Salesforce's data export tools or custom Apex jobs to extract and transfer large volumes of data periodically. This approach is ideal for scenarios where real-time updates are not critical.

**Pros:**

- Efficient for large data volumes
- Reduces system load during business hours
- Can leverage Salesforce's native scheduling capabilities

**Cons:**

- Not suitable for real-time data needs
- May require significant processing time for large datasets
- Needs careful management of data consistency

According to Salesforce, 42% of enterprise customers use batch data export for nightly synchronization with data warehouses and analytics platforms [9].

When selecting an integration approach, organizations must carefully evaluate their specific requirements, considering factors such as data timeliness, volume, and the capabilities of both Salesforce and the external system. Many successful integration strategies employ a combination of these approaches to address various use cases within the same ecosystem.

## 6. EXTERNAL SYSTEMS TO SALESFORCE INTEGRATION

Integrating external systems with Salesforce is a critical aspect of creating a unified data ecosystem. Organizations have several options to consider, each with its own strengths and use cases. The choice of integration method depends on factors such as data volume, update frequency, and the capabilities of both Salesforce and the external systems.

**Inbound Data Loading:**

Inbound data loading utilizes Salesforce's native tools and APIs to import data from external systems. This approach is versatile and can handle various data volumes and frequencies. According to a Salesforce integration survey, 62% of organizations use the Bulk API for large-scale data imports, citing its ability to handle millions of records efficiently [11].

**API-based Integration:**

API-based integration allows external systems to push data into Salesforce using Salesforce's APIs. This method offers real-time or near real-time data updates and is suitable for scenarios requiring timely data synchronization.

A study by Forrester Research found that organizations implementing API-based integrations with Salesforce experienced a 35% reduction in data latency and a 28% improvement in data accuracy compared to batch-based methods [12].

**Batch Data Import:**

Batch data import involves implementing scheduled jobs to import data from external sources at regular intervals. This approach is ideal for scenarios where real-time updates are not critical and large volumes of data need to be processed. Salesforce reports that 45% of enterprise customers use scheduled batch imports for nightly data synchronization, particularly for integrating with legacy systems and data warehouses [11].

When evaluating these options, consider the following factors:

1. **Data Volume:** For large data volumes (millions of records), the Bulk API or batch imports are generally more efficient.
2. **Frequency of Updates:** Real-time or near real-time requirements are best served by API-based integrations, while less frequent updates can use batch methods.
3. **System Capabilities:** Assess the ability of external systems to make API calls or generate data exports compatible with Salesforce's import tools.
4. **Data Consistency:** Consider how to handle data conflicts and ensure consistency across systems, especially in bi-directional integrations.
5. **Error Handling:** Implement robust error handling and logging mechanisms to manage failed imports and data quality issues.

Organizations often employ a combination of these approaches to address various integration scenarios within their Salesforce ecosystem. For instance, they might use API-based integration for critical, real-time updates while relying on batch imports for large-scale, periodic data synchronization.

As integration technologies continue to evolve, staying informed about Salesforce's latest integration capabilities and best practices is crucial for designing efficient and scalable integration solutions.

## 7. SALESFORCE TO SALESFORCE INTEGRATION

Integrating multiple Salesforce instances has become increasingly common as organizations grow through mergers, acquisitions, or expand globally. This integration scenario presents unique challenges and opportunities. When integrating multiple Salesforce instances, organizations have several approaches to consider, each with its own benefits and considerations.

### **Native Salesforce-to-Salesforce Features:**

Salesforce provides built-in functionality for sharing data between Salesforce organizations, known as Salesforce-to-Salesforce (S2S). This native feature allows organizations to share records and collaborate across different Salesforce instances securely. According to a Salesforce survey, 38% of multi-org enterprises utilize native S2S features for basic data sharing, citing ease of setup and maintenance as primary advantages [13].

### **Pros:**

- Easy to set up and maintain
- Secure and compliant with Salesforce standards
- Automatic field mapping for standard objects

### **Cons:**

- Limited customization options
- May not support all data sharing scenarios
- Can be challenging to troubleshoot in complex implementations

### **Custom API-based Solutions:**

Developing custom integrations using Salesforce APIs offers more flexibility and control over the data exchange process. This approach is particularly useful for complex integration scenarios or when native S2S features don't meet specific requirements. A study by Gartner found that 65% of large enterprises prefer custom API-based solutions for Salesforce-to-Salesforce integration, citing greater control and the ability to implement complex business logic [14].

#### **Pros:**

- Highly customizable and flexible
- Supports complex integration scenarios
- Allows for real-time or batch processing

#### **Cons:**

- Requires more development effort
- Needs careful management of API limits
- May require additional security measures

### **Data Replication Strategies:**

Implementing data replication strategies involves creating solutions to maintain data consistency across multiple Salesforce instances. This approach is often used for scenarios requiring large-scale data synchronization or when maintaining separate but synchronized environments. According to Salesforce, 27% of multi-org enterprises use data replication strategies for large-scale data synchronization, particularly in scenarios involving data warehousing or analytics [13].

#### **Pros:**

- Efficient for large-scale data synchronization
- Allows for data transformation and cleansing during replication
- Can support complex multi-org scenarios

#### **Cons:**

- May introduce data latency
- Requires careful management of data conflicts
- Can be complex to set up and maintain

When selecting an approach for Salesforce-to-Salesforce integration, organizations should consider factors such as:

1. Data volume and synchronization frequency
2. Complexity of business logic and data transformation requirements
3. Security and compliance considerations
4. Available technical resources and expertise
5. Long-term maintainability and scalability needs

Many successful Salesforce-to-Salesforce integration strategies employ a combination of these approaches to address various use cases within the same ecosystem. For instance, an organization might use native S2S features for sharing basic customer information, while implementing custom API-based solutions for more complex, real-time integrations involving custom objects and business logic.

As Salesforce continues to evolve its integration capabilities, staying informed about the latest features and best practices is crucial for designing efficient and scalable Salesforce-to-Salesforce integration solutions.

## **8. DECISION FRAMEWORK FOR SELECTING INTEGRATION PATTERNS**

Selecting the appropriate integration pattern for Salesforce is a critical decision that can significantly impact the success of an organization's data integration strategy. To guide this selection process, a structured decision framework is essential. This framework should consider various factors and help stakeholders make informed choices based on their specific requirements and constraints.

Key Considerations:

1. **Data Volume and Frequency of Updates:** The volume of data and how often it needs to be updated are crucial factors in determining the most suitable integration pattern. For instance, high-volume, frequent updates may benefit from batch processing, while low-volume, critical updates might require real-time integration.
2. **Real-time Requirements vs. Batch Processing Tolerance:** Assess the business need for real-time data. Some processes, such as customer service interactions, may require immediate data synchronization, while others, like nightly financial reconciliations, can tolerate batch processing.
3. **System Capabilities and Limitations:** Evaluate the capabilities of both Salesforce and the external systems involved in the integration. Consider factors such as API limits, data processing capabilities, and supported integration technologies.
4. **Implementation and Maintenance Resources:** Assess the available technical resources and expertise within the organization. Complex, custom integrations may require specialized skills and ongoing maintenance, while simpler, out-of-the-box solutions might be more suitable for organizations with limited technical resources.
5. **Security and Compliance Requirements:** Consider any industry-specific regulations or internal security policies that may impact the choice of integration pattern. For example, healthcare organizations may need to ensure HIPAA compliance in their integration strategies.

According to a survey by MuleSoft, 73% of IT leaders consider security and compliance as the top priority when selecting integration patterns for Salesforce [15]. A study by Forrester Research found that organizations using a structured decision framework for integration pattern selection reported a 40% reduction in integration-related issues and a 25% improvement in project delivery times [16].

By utilizing a structured decision framework, organizations can ensure that they select the most appropriate integration pattern for their specific needs. This approach helps balance technical requirements with business needs, leading to more successful and sustainable Salesforce integrations.

## 9. MAINTENANCE AND MONITORING

Effective maintenance and monitoring are crucial for ensuring the long-term success and reliability of Salesforce integrations. As the Salesforce ecosystem and integrated systems evolve, organizations must implement robust strategies to maintain optimal performance, address issues proactively, and adapt to changes.

Key Aspects of Maintenance and Monitoring:

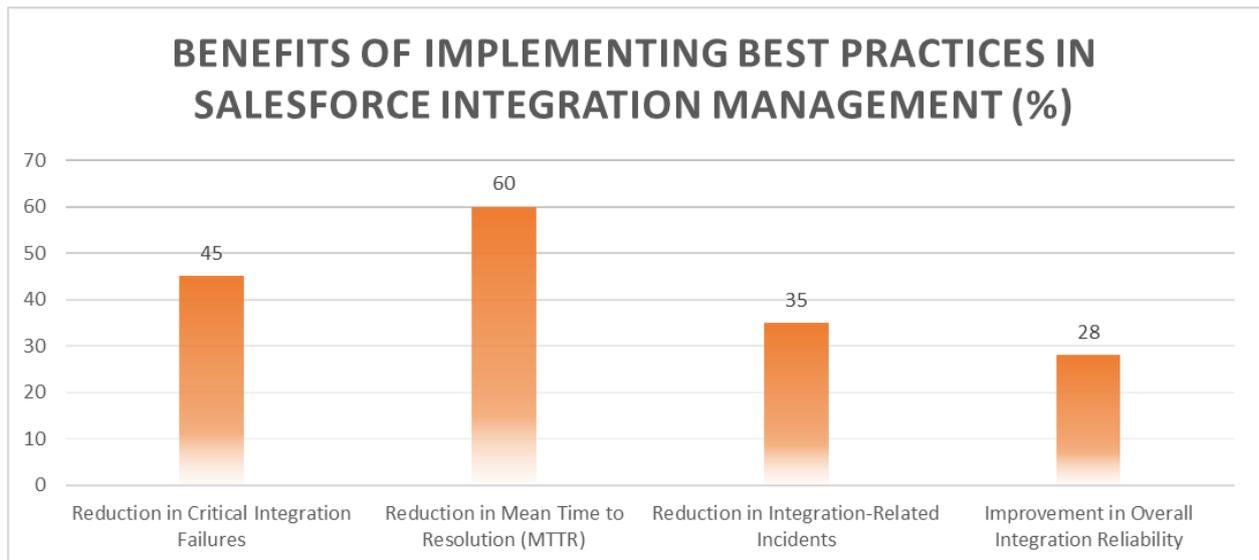
1. **Regular Monitoring of Integration Processes:** Continuous monitoring of integration processes is essential to identify and address issues promptly. This involves tracking key performance indicators (KPIs) such as data transfer rates, error rates, and system response times. According to a survey by Salesforce, organizations that implement comprehensive monitoring solutions for their integrations experience 45% fewer critical integration failures and reduce mean time to resolution (MTTR) by 60% [17].
2. **Implementing Alerting Mechanisms:** Proactive alerting is crucial for identifying and addressing integration failures quickly. This can involve email notifications, SMS alerts, or integration with incident management systems.
3. **Periodic Reviews of Integration Performance:** Regular performance reviews help identify trends, optimize processes, and ensure that integrations continue to meet business requirements.
4. **Adapting to Salesforce Updates and API Changes:** Salesforce releases updates three times a year, which may include API changes. Staying informed about these updates and adapting integrations accordingly is crucial for maintaining functionality.

Best Practices for Maintenance and Monitoring:

1. **Implement Comprehensive Logging:** Maintain detailed logs of integration activities, including successful operations and errors. This aids in troubleshooting and performance analysis.
2. **Utilize Salesforce Event Monitoring:** Leverage Salesforce Event Monitoring to track API usage, performance, and security events related to integrations.
3. **Establish Performance Baselines:** Create performance baselines for normal integration operations. This helps in quickly identifying deviations that may indicate issues.
4. **Conduct Regular Security Audits:** Perform periodic security audits of integration points to ensure compliance with organizational and industry standards.
5. **Implement Version Control:** Use version control systems for integration code and configurations to manage changes effectively and enable rollbacks if needed.
6. **Automate Testing:** Implement automated testing for integration processes to quickly identify issues introduced by changes or updates.

A study by Gartner found that organizations implementing these best practices for Salesforce integration maintenance and monitoring reduced integration-related incidents by 35% and improved overall integration reliability by 28% [18].

By implementing robust maintenance and monitoring strategies, organizations can ensure the continued reliability, performance, and security of their Salesforce integrations. This proactive approach not only minimizes downtime and data inconsistencies but also enables organizations to adapt quickly to changing business needs and technological advancements.



**Fig. 2:** Impact of Maintenance and Monitoring Practices on Salesforce Integration Performance [17, 18]

## 10. CONCLUSION

In conclusion, effective Salesforce data integration is a critical factor in achieving a unified view of customer interactions, streamlining business processes, and deriving actionable insights. This article has provided a structured approach to selecting and implementing integration patterns within Salesforce environments, covering various use cases, key considerations, and best practices. By carefully evaluating factors such as data volume, real-time requirements, system capabilities, and security considerations, organizations can select the most appropriate integration patterns and strategies. The importance of ongoing maintenance and monitoring cannot be overstated, as it ensures the continued reliability, performance, and security of Salesforce integrations. As the business landscape continues to evolve, the ability to effectively integrate Salesforce with other systems will become increasingly critical for maintaining competitive advantage. By applying the insights and frameworks presented in this article, organizations can overcome data integration challenges, fully leverage the capabilities of their Salesforce CRM platform, and drive successful digital transformation initiatives.

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